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ABSTRACT

This report, responding to a Florida legislative request, examines the Palm Beach County School Board's planned purchase of concrete relocatable classrooms. The report presents a number of findings and recommendations. Concrete units are more expensive than models with metal stud walls; both types meet state building code standards. The district plans to spend $35 million over 5 years to purchase 500 concrete relocatables. The district's purchase price for concrete relocatables is higher than prices for similar units in other districts. Concrete relocatables are more expensive to purchase and move than alternative types of relocatables, but have the appearance of permanent construction and may have a longer life. If the district purchases 500 concrete units as planned, it will spend approximately $12.7 million more for these units over the 5-year period than if it had bought metal stud wall units. In addition, it costs $1,150 more to move a concrete unit to another location than a metal stud unit. The district reasoned that concrete units were more durable and safer. However, the district did not conduct a life-cycle cost analysis prior to its decision. To better justify future relocatable expenditures, the report recommends that the board conduct life cycle cost analyses to compare available relocatables. (EV)

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Special Review

April 2002

Report No. 02-23

Palm Beach School Board Acquisition of Relocatable Classrooms Examined

at a glance

The Palm Beach County School District forecasts student enrollment to increase by 18,000 students by Fiscal Year 2006-07. The district plans over the next five years to construct 21 new schools, to modernize 35 existing facilities, and to use relocatable classrooms during construction.

In response to a legislative request, OPPAGA examined the planned purchase of concrete relocatable classrooms. Concrete units are more expensive than models with metal stud walls. Both types meet state building code standards.

- The district plans to spend $35 million over five years to purchase 500 concrete relocatables.
- The district's purchase price for concrete relocatables is higher than prices for similar units in other districts. Concrete relocatables are more expensive to purchase and move than alternative types of relocatables, but have the appearance of permanent construction and may have a longer life.
- If the district purchases 500 concrete units as planned, it will spend approximately $12.7 million more for these units over the five-year period than if it had bought metal stud wall units. In addition, it costs $1,150 more to move a concrete unit to another location than a metal stud unit.
- The district reasoned that concrete units were more durable and safer. However, the district did not conduct a life cycle cost analysis prior to its decision. To better justify future relocatable expenditures, we recommend that the board conduct life cycle cost analyses to compare available relocatables.

Purpose

Pursuant to s. 11.511, and s. 11.45, *Florida Statutes,* the Director of the Office of Program Policy Analysis and Government Accountability initiated this project in response to a legislative request to examine the Palm Beach County School Board's plans to purchase relocatable classrooms. OPPAGA examined the following issues:

- the annual and five-year cost to purchase planned relocatables;
- a comparison of the cost of Palm Beach relocatables to other types of relocatables purchased by the district and those purchased by other districts, and the expected usable life of the relocatables; and
- why the Palm Beach County School District believes it should purchase the more expensive concrete relocatable classrooms.

Background

The Palm Beach County School District is the fourth largest school district in Florida and the fourteenth largest in the United States. The district, which covers a geographic area approximately the size

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of Rhode Island, is currently serving over 150,000 kindergarten through twelfth grade students and 3,000 pre-kindergarten students in its 143 schools. The district employs over 19,000 and has budgeted approximately $2 billion for Fiscal Year 2001-02.

As many other Florida counties, Palm Beach County is experiencing significant population growth. The school district estimates that student enrollment will increase by over 18,000 by Fiscal Year 2006-07. To contend with the growing enrollment, the district is undergoing a massive school construction initiative. The district's capital improvement plan forecasts spending $410 million to build 21 new schools and $776 million to renovate and modernize 35 of its 143 schools by Fiscal Year 2005-06. According to the planning staff, the district's goal is to complete most of its new construction and renovations by Fiscal Year 2005-06.

Relocatables, also called portables, are an integral element of the district's plans to meet its construction goals. Relocatables are used to house students while construction projects are being completed. When schools are renovated, students displaced by construction are temporarily housed in relocatables until the construction can be finished. Relocatables are also used to increase capacity of overcrowded schools when the demand for classroom space exceeds the school's capacity. As shown in Exhibit 1, the school district currently has 1,803 relocatables.

Relocatables can be classified into two types: Type VI and Type IV construction. Most of the district's inventory is older wood frame structures made of Type VI construction, which means that the exterior load-bearing walls and roof members are wholly or partly wooden. However, the 1999 State Requirements for Educational Facilities increased building code standards for relocatables. This new requirement mandates that all new relocatables must be constructed of Type IV construction, in which the structural members, including the load-bearing walls and roofs, are made of non-combustible materials. In addition to this requirement, previously the 1997 Legislature passed Ch. 97-384, *Laws of Florida*, which directs that student stations in older relocatables (those over 20 years of age) that were in use during the 1998-99 fiscal year are to be removed, and the number of relocatables at over-capacity schools is to be decreased by half by July 1, 2003.

The district has purchased two varieties of Type IV relocatables: concrete and metal stud wall units. Concrete relocatables have poured concrete walls and floors reinforced with rebar. These units rest on 15 concrete pads, or footers, directly on the ground. These units have the look and feel of permanent construction.

Exhibit 1
Palm Beach County Relocatable Classroom Inventory, March 2002

Type of Relocatable	Leased or Owned	Type of Construction	Average Age	Number in Inventory
Wood frame relocatables (various manufacturers)	Owned	Type VI	1984	1,187
Williams-Scotsman	Leased	Type VI	1988	360
General Electric	Leased	Type VI	1998	38
Masonry block (MA)	Owned	Type VI	1982	57
Royal Concept 2000 - concrete	Owned	Type IV	2001	144
HalfAcre Construction - metal stud wall	Owned	Type IV	2001	17
TOTAL				1,803

Source: Department of Maintenance and Plant Operations, Palm Beach County School District.

Exhibit 2
The School District Plans to Reduce Relocatable Inventory to 713 Units by Fiscal Year 2006-07

	2001-02	2002-03	2003-04	2004-05	2005-06	2006-07		
Beginning Inventory	1,563	1,448	1,298	1,143	993	763		
Phase-out leased relocatables	-135	-150	-55	-50	-30	0	420 0	returned remaining
Eliminate older relocatables	-80	-100	-200	-200	-200	-50	830 313	demolished remaining
Install new relocatables	100	100	100	100	0	0	400	installed
Ending Inventory	1,448	1,298	1,143	993	763	713		

Note: The 2001-02 beginning inventory of 1,563 includes 100 new relocatables purchased during Fiscal Year 2000-01. Fiscal Year 2001-02 figures do not correspond with totals in Exhibit 1 because these figures only include relocatables for classroom usage and the district has not yet returned as many relocatables to the vendor as planned.
Source: Maintenance and Plant Operations, Palm Beach County School District.

The district has also purchased metal stud wall units, which resemble traditional portable trailers, but have steel frame construction and a variety of siding materials. They are installed above grade, are tied to the ground with anchored fasteners, and require steps and ramps to provide access and compliance with the Americans with Disabilities Act.

As shown in Exhibit 2, the district's approach to relocatables is threefold. First, the district plans to phase out its 420 leased relocatables. These relocatables cost the district over a $1 million a year, based on past expenditures. Moreover, these units average 13 years in age and require significant maintenance. Second, the district plans to dispose of 830 of its older Type VI wood frame relocatables. Third, the district purchased 100 new Type IV relocatables during Fiscal Year 2000-01 and plans to purchase 400 more for a total of 500 that meet the state's new, more stringent building codes. As a result the district will have a smaller, sturdy fleet of relocatables at the end of the construction boom.

To meet this goal, the school board, in October 1999, solicited bids for both concrete and metal stud wall Type-IV relocatables. Royal Concept 2000 was awarded the contract for the concrete units and HalfAcre Construction was awarded the contract for the metal stud wall units. In practice, the district's plan has been to purchase concrete relocatables, and it has bought metal stud units only when it could not acquire concrete ones in the desired time frame (such as to meet overcrowding needs). The school board voted on May 3, 2000, to purchase the first of its concrete relocatables. To date, the district has issued two 100-unit open purchase orders to Royal Concept 2000 to supply the district with concrete relocatables (144 have been purchased since Fiscal Year 2000-01).

Questions and Answers

What is the annual and five-year cost of purchasing the planned relocatables?

The school district plans to spend approximately $7 million a year for five years to purchase new relocatables for a total of $35 million.

As shown in Exhibit 3, the school district plans to incur approximately $72 million for all relocatable costs from Fiscal Years 2000-01 to 2005-06. There are three categories of total projected costs.

- **Purchase cost.** The district estimates that it will spend $35 million or approximately $7 million each year for five years to purchase 500 new relocatables. This estimate is based on the $67,036 purchase price for each concrete relocatable ($67,000 x 100 units = $6.7 million). As of June 30, 2001, the district had spent approximately $1.7 of its $7 million 2000-01 fiscal year budget.

Exhibit 3
Projected Expenditures for Relocatables

	2000-01	2001-02	2002-03	2003-04	2004-05	2005-06	Total
Purchase of new relocatables	$5,285,047	$ 7,000,000	$ 7,000,000	$ 7,000,000	$ 7,000,000	$ 0	$33,285,047
Leases on old relocatables	295,869	1,300,000	1,000,000	700,000	500,000	175,000	3,970,869
Relocation / reclamation of units	2,331,708	8,000,000	6,400,000	6,100,000	6,100,000	5,800,000	34,731,708
Total	$7,912,624	$16,300,000	$14,400,000	$13,800,000	$13,600,000	$5,975,000	$71,987,624

Note: Of the $7 million budgeted for Fiscal Year 2000-01, $1.7 million was spent and $5.3 million is in projected expenditures, which includes encumbered funds, as of June 30, 2001.
Source: Palm Beach County School District Fiscal Year 2002 – Fiscal Year 2006 Five-Year and Fiscal Year 2002 Capital Budget Adopted September 10, 2001.

- **Lease costs.** The district currently makes lease payments on 398 relocatables. The average payment is $350 per month per relocatable. The yearly lease costs decrease over the five-year period reflecting the district's plan to return these leased units to the vendors.
- **Relocation costs.** This category incorporates all of the costs associated with relocating, preparing the relocatables for use, and demolishing them. For example, relocation includes moving the units; connecting electricity, water, sewer, fire alarms and security systems; and constructing stairs and wheelchair ramps. Relocation also includes projected reclamation costs, which are costs associated with restoring a site to its pre-relocatable condition when a relocatable is moved to another site.

How does the cost of concrete relocatables compare to the cost of other relocatables purchased by the district and by other districts?

The concrete relocatables are more expensive to purchase and move than other Type IV relocatables, but more closely approximate permanent construction. If the district purchases 500 concrete units as planned, it will spend approximately $12.7 million more for these units over the five-year period than if it had bought metal stud units. In addition, it costs $1,150 more to move a concrete unit to another location than a metal stud unit. The prices paid by the district in general for relocatables are comparable to those paid by other districts, but prices for concrete units are higher.

As shown in Exhibit 4, the cost to purchase a concrete relocatable is approximately $25,324 higher per unit than a Type IV metal stud wall relocatable. If the district purchases 500 concrete units as planned, it will spend approximately $12.7 million more for these units over the five-year period than if it had bought metal stud units. In addition, it costs $1,150 more to move a concrete unit to another location than a metal stud unit. The concrete units are heavier and require a special crane to position them on the concrete pads. As the district has not yet estimated how frequently it plans to move the concrete relocatables over the next five years, we could not determine the total moving costs.

The concrete units have a cost advantage in that no wheelchair ramps and stairs are needed because they are placed at ground level. The metal stud units require these additions at an estimated $6,000 cost per unit. However, metal stud units have an advantage because they are already elevated from ground level and can be placed in flood-prone areas. The cost for elevating and leveling grades with fill so that concrete units are above the flood level is estimated at $5,000 to $6,000 for a site holding multiple units.

Exhibit 4
Concrete Relocatables Are More Expensive to Purchase and Move, But Require No Stairs or Ramps

	Concrete, Type IV (Royal Concept 2000)	Metal stud Wall, Type IV (HalfAcre Construction)	Cost Difference
Purchase cost, includes delivery, set-up blocking, leveling, and tie-down	$67,036 - 24'X40' w/ restroom $63,086 – 24'x36' w/o restroom	$41,712 - 24'X40' w/ restroom $37,567 – 24'x36' w/o restroom	$25,324 $25,519
Moving costs	$4,200 + $50 per mile	$3,050 + $50 per mile	$1,150
Utilities costs	$1,000 estimated per year	Same	None
Maintenance costs	No maintenance history available	No maintenance history available	None
Reclamation costs – returning the site to pre-relocatable conditions	$12,000 to $20,000 depending on the number of relocatables, distance from main building structure, repair to irrigation systems, etc.	Same	None
Miscellaneous costs	$5,000 to $6,000 per site for fill and grading to ensure that relocatables are placed above the flood plain	$6,000 per unit for stairs and wheelchair ramps	Varies

Source: Department of Maintenance and Plant Operations, Palm Beach County School Board.

Other cost comparisons are less objective and would require speculation. District staff were unable to estimate the potential maintenance costs of either the concrete or metal-frame units because neither have maintenance histories. Other cost categories, such as utilities and reclamation, are expected to be similar.

The district's cash outlays for concrete units appear higher than prices of similar units purchased in other districts. The Broward County School District is currently purchasing Royal Concept 2000 concrete relocatables for an average price of $65,000, slightly below Palm Beach County's price. The Orange County School District acquired 230 concrete relocatables from New Century Classroom Products for approximately $41,000 per unit through a lease/purchase agreement (monthly lease payments for 10 years totaling $41,000 with a purchase price of $1 after the 10 years). Both the Miami Dade and Osceola County School Districts have purchased metal stud wall relocatables rather than concrete units.

What is the expected usable life of these relocatables?

Although there is no accepted method for determining expected usable life, both types of units can be expected to last over 20 years.

Though it is difficult to quantify usable life, one indicator of a relocatable's durability is its roof warrantee. According to the district's maintenance staff, the stability of the roof is the most significant factor affecting the structure's life. The contract specifications for the concrete relocatables require that the roof shall be warranted for a period of 20 years by the vendor against rupture, structural failure, perforation or corrosion. The roof structure for the metal stud wall units was not specifically warranted in the contract documents, but according to the vendor, the roof would be expected to last 25 years. Given the durable exteriors of the new Type IV units, it is reasonable to anticipate that both types of relocatables will last over 20 years with proper maintenance.

Existing statutory and state building code requirements will also ensure that relocatables are not used longer than they should. Section 235.061(2), *Florida Statutes,* requires an annual inspection of existing relocatables to ensure that they meet standards for "satisfactory" buildings, including adequate roofing/moisture protection. Relocatables that fail to meet these standards cannot be used as classrooms.

Why did the Palm Beach County School District believe it should purchase the more expensive relocatable classrooms?

The district's rationale for buying concrete rather than traditional relocatables was that concrete units were more durable and safer than alternative units. However, the district did not conduct a life cycle cost analysis to determine if this decision was cost-effective.

From its perspective, the district believed that if the county was going to purchase new Type IV units, that it should get the best available. According to board members and staff, the district decided to purchase the concrete units because these units had the look and feel of permanent construction, and the board believed the units would be more durable and safer than the traditional relocatables. The board reasoned that the concrete exterior would have a longer life than the siding on the other Type IV units and believed the extra expense was justified.

While the board believed the concrete units made economic sense, the decision was not based on a life cycle cost analysis or similar assessment of long-term cost effectiveness. A life cycle cost analysis is an economic evaluation technique that determines the total cost of owning and operating a facility over a period of time. The analysis or similar cost-effectiveness assessment is integral for determining the cost of building operations over the life of a building. Instead of considering only the cost to purchase a building, a life cycle analysis takes into account projected operation, maintenance, repair, replacement, and disposal costs.

Florida Statutes recognize the importance of identifying life cycle costs for state-owned facilities. Section 235.26, *Florida Statutes,* requires the Department of Education to develop standards for construction materials and systems based on life cycle costs that consider initial costs, maintenance costs, custodial costs, operating costs, and life expectancy. The intent of the Legislature is to prohibit district school boards from making capital outlays for that do not comply with standards.

Neither the school district staff nor the board conducted a formal life cycle cost analysis to determine the long-term costs of purchasing either type of unit. A life cycle cost analysis was critical given the district's plans for the relocatables. For instance, the higher moving costs for the concrete relocatables is significant, given the district's plans to move these units from school to school to facilitate construction and modernization. Of the 114 concrete relocatables installed during the 2001 calendar year, 57 (50%) are housing students temporarily for construction or modernization purposes. The district will incur a cost of $65,550 more to move these 57 concrete units compared to moving an equivalent number of metal stud wall units. Moreover, the total cost of concrete units when they have to be moved and reinstalled begins to approach the cost of permanent construction. For example, while the statewide average cost of permanent construction is $127.65 per square foot, the cost of concrete units is approximately $103 per square foot, including moving and installation.

An analysis of historical maintenance costs may also have assisted the board in its decision. The district currently owns relocatables with exteriors similar to the Type IV units and could have compared maintenance costs for these units as a proxy. For example, the district owns 57 Type VI masonry block relocatables, which have similar exteriors to new Type IV concrete units. Similarly, the district's Williams-Scotsman leased units have metal siding similar to the metal stud wall units. In the experience of the district's maintenance staff, both of these types of older units have lower maintenance costs than traditional wood frame units. However, the metal siding of the Williams-Scotsman unit dents more easily, and it is difficult to repair. Moreover, a patched unit is not aesthetically pleasing. In contrast, the concrete masonry block units are not prone to such problems. A comparison of historical maintenance data on these older Type VI units would have given the board additional information to make its decision.

To better justify future relocatable expenditures, we recommend that the board conduct life cycle cost analyses to compare available Type IV units. This life cycle analysis should include a comparison of relocation costs, given the estimated number of moves per year, the suitability of the units as classrooms, and the acquisition and maintenance costs to determine which type of unit would best meet the district's needs under various scenarios. For example, such an analysis could conclude that it could be more cost-effective to purchase metal stud units that are slated to be moved frequently over the next five years and concrete units for those are not slated to be moved during this period. The analysis should also compare relocatable costs to permanent construction costs. Historical maintenance expenses for relocatables similar to the Type IV units would also provide some meaningful comparison data. In addition, the district should consider actively contacting other school districts to identify other relocatable vendors, rather than relying solely on a bid process to attract vendors. At least one other district, Orange County, has acquired concrete relocatables from an alternate provider at a lower cost for these units.

Agency Response

In accordance with the provisions of s. 11.513, *Florida Statutes,* a draft of our report was submitted to the superintendent of the Palm Beach County School District for his review and response. The superintendent's written response is reprinted herein (Appendix A, page 8).

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March 28, 2002

Mr. John W. Turcotte, Director
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and Government Accountability
111 West Madison Street, Room 312
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RE: Palm Beach School Board Acquisition of Relocatable Classrooms Examined

Dear Mr. Turcotte:

The Palm Beach School District appreciates the effort taken by OPPAGA staff to understand the various considerations that must be factored into a cost analysis of varying types of relocatable classrooms. The District will complete a life cycle cost analysis comparing various types of units and options for meeting the needs of temporary classroom space as recommended. This will also include an analysis of potentially using more permanent modular classroom structures for longer-term needs.

The District will also investigate other vendors identified that offer similar units for pricing comparisons. Since transporting relocatable units can add substantially to the cost, location of each vendor and transportation costs will be included in our vendor price comparison.

Again, thank you for the opportunity to address this issue.

Sincerely,

/s/
Arthur C. Johnson
Superintendent

ACJ:gv

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